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# Effect of Subliminal Stimulation of Symbiotic Fantasies on Behavior Modification Treatment of Obesity

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In two studies, obese women were treated in a behavior modification program for overeating, in Study 1 for 8 weeks and in Study 2 for 12 weeks. In both studies, the behavior programs were accompanied by subliminal stimulation, with half of the subjects receiving the verbal message MOMMY AND I ARE ONE, intended to stimulate symbiotic gratification fantasies, and the other half, a control message. Weight loss was measured at the end of the program and at follow-up times; in Study 1, 4 weeks after termination and in Study 2, at 4 and 12 weeks posttermination. In both studies the symbiotic condition gave evidence of enhancing weight loss, though it was only at follow-up that the difference between the groups attained statistical significance. This finding, when viewed in conjunction with results from earlier studies of schizophrenics and insect phobics, supports the proposition that the subliminal stimulation of symbiotic fantasies can enhance the effectiveness of therapeutic interventions of various kinds.

During the past 12 years, a research method termed *subliminal psychodynamic activation* has been used in the experimental study of a critical aspect of psychoanalytic theory: the relationship between psychopathological behavior and unconscious libidinal and aggressive wishes. In most of this work, the stimuli were designed to stir up these wishes with the prediction that their subliminal presentation (as compared to the subliminal presentation of relatively neutral stimuli) would measurably intensify particular kinds of psychopathology. In over 20 studies completed to date (summarized in Silverman, 1976), this expectation has been borne out. The subliminal presentation of a wish-related stimulus produced pathological reactions that did not appear after the subliminal presentation of a neutral stimulus; and in a number of studies, they also did not appear after the wish-related stimulus was presented supraliminally and in the subject's awareness.[1]

In another aspect of the research, however, instead of using stimuli designed to *stir up* unconscious wishes and intensify psychopathology, a stimulus was used that was intended

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[1] These studies should be distinguished from the more traditional experiments in the "subliminal area" that have aimed at "finding" the tachistoscopically exposed stimulus (in transformed guise) in the subsequent productions of the subject, rather than at observing its pathological effects. For the reader whose contact with the subliminal area ended with the early skeptical critiques of the phenomenon, see the recent exhaustive and detailed review of Dixon (1971). Finally, for a discussion of why the supraliminal presentation of the same stimuli usually fails to trigger a pathological reaction and why subliminal presentation is then the method of choice for the laboratory study of psychodynamic aspects of psychoanalytic theory, see Silverman (1972).

to safely *gratify* a particular wish and *reduce* pathology. This stimulus was the verbal message MOMMY AND I ARE ONE. Its use was based on the following two interrelated assumptions: (a) The fantasized gratification of the wish for oneness with mommy—the good mother of infancy—can ameliorate psychopathology of various kinds (cf. Silverman, Note 1); and (b) the subliminal presentation of the words MOMMY AND I ARE ONE has the power to activate this fantasy.

In support of the above assumptions, the following can be cited: First, in experiments carried out with eight groups of male schizophrenics (Bronstein, 1976; Kaplan, 1976; Kaye, 1975; Leiter, 1973; Silverman & Candell, 1970; Silverman, Spiro, Weissberg, & Candell, 1969; Spiro, 1975), the subliminal presentation of this "symbiotic gratification stimulus" when compared with the (subliminal) effects of a neutral control message has been found to reduce the degree to which "ego pathology" is manifested within a laboratory session. Second, with two groups of male homosexuals (research volunteers), another ameliorative effect has been found—a decrease in anxiety and defensiveness within a laboratory session after the subliminal exposure of this same symbiotic gratification message (Silverman, Kwawer, Wolitzky, & Coron, 1973).

In addition to the above findings, there have been three studies in which more than a "laboratory effect" has been demonstrated. In one, (Silverman, Frank, & Dachinger, 1974), the effectiveness of the symbiotic gratification stimulus as an aide in the behavioral treatment of insect phobias was demonstrated. Twenty women with insect phobias were seen twice weekly for six sessions. The first and last sessions were for pretreatment and posttreatment assessments of the degree of phobia, with the intervening four sessions for treatment—a variant of systematic desensitization. At each treatment session, subjects imaged scenes of insects that they had previously arranged hierarchically for their anxiety-arousing effects. Subjects began with the least fearful image and progressed to more frightening scenes. After each image, the subjects gave a subjective rating of the degree of discomfort that they experienced. When discomfort ratings exceeded a specified level, the subjects looked into the tachistoscope for subliminal stimulation. Stimulation was repeated until the discomfort ratings for a particular image were below the criterion level, and subjects then progressed to the next image in the hierarchy. In the usual systematic desensitization paradigm, the imaging is accompanied by deep muscle relaxation. This study substituted subliminal stimulation for the muscle relaxation technique, with the experimental group receiving MOMMY AND I ARE ONE while subjects in the control group received the stimulus PEOPLE WALKING, intended as a (relatively) neutral verbal message. Following the four intervention sessions, on measures of both avoidance and anxiety, the experimental subjects showed a significantly greater degree of improvement of their phobic symptoms than the control subjects.

A second experiment (Silverman, Levinson, Mendelsohn, Ungaro, & Bronstein, 1975) investigated the effects of stimulating symbiotic fantasies during brief therapy with recently hospitalized male schizophrenics. Forty subjects were seen individually, three times a week, over a 6-week period. Treatment consisted of a "fantasy expression" procedure, in which the subjects were shown pictures and were encouraged to fantasize about them, with special emphasis on deriving pleasure from the fantasy and stressing the distinction between fantasy and reality. Half of the subjects were subliminally stimulated with MOMMY AND I ARE ONE several times during each fantasy expression session. The other half received as a control the stimulus PEOPLE ARE WALKING. Pretreatment and posttreatment assessments were made of "ego pathology" on the basis of cognitive and projective tests, interview ratings, and ratings of ward behavior made by the nursing staff. Both groups showed a reduction in the amount of ego pathology in evidence after treatment, but those who had received the experimental stimulus showed a significantly greater reduction.

In the third study (Parker, 1977), two groups of male and female college undergraduates ($n = 20$ in each group), matched

for academic performance, were given tachistoscopic stimulation at the beginning of a class four times a week over a 6-week summer term. For one group the stimulus was MOMMY AND I ARE ONE, whereas for their matched counterparts it was PEOPLE ARE WALKING. The students in the former group received grades on their final exam ("blindly" marked) that were significantly and substantially higher than did the controls (average marks of 90.4% and 82.7%, respectively).[2]

The present study was intended as an extension of this earlier work with a new subject population—obese women—and accompanying a different intervention—behavior modification training in weight control. It was hypothesized that for persons being treated for obesity with this form of therapy, those whose treatment was accompanied by the subliminal presentation of the symbiotic stimulus would lose more weight than similar persons in the same treatment who were presented with subliminal neutral stimulation. In addition to the point cited earlier about the general ameliorative effects of symbiotic gratification fantasies, the following specific rationale can be offered for predicting such a finding with this population: From psychoanalytic clinical observations of obese patients (Bruch, 1973; Bychowski, 1950), it can be inferred that overeating for the obese person is often motivated by ungratified unconscious wishes for a symbiotic experience. Thus, the fantasied gratification provided by repeated subliminal exposure to the MOMMY AND I ARE ONE stimulus was expected to make their overeating less necessary and thus aid them in successfully using the weight control program.[3]

## Study 1 [4]

### *Method*

*Subjects.* Thirty obese women were recruited through an advertisement in a local newspaper. All subjects were at least 15% overweight, based on the 1959 Metropolitan Life Insurance norms for desirable weights for women (U.S. Department of Health, Education, and Welfare, 1967). Percentage of overweight was determined using the middle weight of the range given for a woman of medium frame at a given height as a baseline. To be eligible for the study, each subject had to state that she felt herself to be an overeater, that she was not currently involved in any organized program of treatment for obesity, and that she had the time and motivation to attend the treatment sessions. In addition, a brief interview was conducted with each potential subject to screen out psychotic and borderline-psychotic applicants. Four women were excluded on this basis. During the course of data collection, three subjects dropped out after the first session (two of these had been assigned to the experimental group and one to the control), and they were replaced by other applicants.

Subjects were randomly assigned to an experimental and control group. The overall sample ranged in age from 22 to 59, with mean age of 30.7 for the

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[2] In two other recent studies, subliminal symbiotic stimulation has been used with college students. Sackeim (1977) found that within a laboratory session, the MOMMY AND I ARE ONE stimulus heightened self-esteem (as measured by a semantic differential scale). On the other hand, Condon (1976) obtained negative results in attempting to replicate the findings of Silverman, Frank, and Dachinger (1974). Here, it may be important that the population Condon used, unlike the original population, did not consist of persons seeking treatment for their phobias. Instead, the sample was comprised of students, who although manifesting a certain degree of phobic symptomatology, entered the study to fulfill a psychology class requirement. It thus may be that for subliminal symbiotic stimulation to enhance the effectiveness of a treatment intervention, individuals must be motivated to overcome whatever behavior the treatment is intended to address. Further research is planned to test out this and other possibilities to account for Condon's nonreplication.

[3] The "wishes for a symbiotic experience" referred to above can be seen as related to the "symbiotic phase of development" (cf. Mahler, Pine, & Bergman, 1975), defined as the period of infancy when differentiation from mother and a sense of separateness from her are minimal and most incomplete. The "oneness" with her at this time can serve a number of needs: her presence is guaranteed; her "omnipotence" is shared; nurturance is always available; and she can offer both protection against external dangers and assistance in mastering inner dangers—that is, helping to control unacceptable impulses of various kinds. A legacy of this symbiotic phase of development is the merging wishes referred to above that are viewed as characterizing, to varying degrees, different people throughout their lives. That is, to the extent that needs for protection, omnipotence, nurturance, and so on, are powerful and still sought in the manner of early infancy, wishes for oneness with "mommy" arise. The extent to which they are then gratified depends on the degree of internal conflict such wishes generate as well as on external circumstances.

[4] This study was part of a doctoral dissertation submitted by the second author (Martin, 1975) in partial fulfillment of the requirements for a doctoral degree at New York University.

experimental subjects and 31.8 for the control subjects. The percent overweight for the sample ranged from 15% to 94%, with means of 40.4% for the experimental group and 42.7% for the control. Neither of these differences approached significance, nor did the difference between the groups in racial composition (93% white). The subjects were asked to estimate the length of time that they have been overweight. The mean number of years estimated for the experimental group was 18.3 and for the control group 19.0, a difference that proved to be nonsignificant ($t < 1$).

*Stimuli and tachistoscope.* The symbiotic gratification stimulus consisted of the verbal message MOMMY AND I ARE ONE, printed in ink on a white 3 × 5 card in capital letters with the words MOMMY AND I on one line and the words ARE ONE on a second line. Another card contained the neutral control message PEOPLE WALKING presented on one line. The stimuli were shown through an electronically controlled mirror tachistoscope. The subject looked through an eyepiece at a blank field, and the stimulus was exposed from a second field. The viewing distance was 34 inches (1.3 m), and the surface brightness of a white card for the intensity settings of both fields was 5 ftL. (17.1 cd/m$^2$). Exposure time for the stimulus was 4 msec. In previous experiments under these conditions, no subject was able to recognize the content aspects of any stimulus, and less than 10% could discriminate between flashes of light produced by different stimuli (cf. Silverman, 1976).

*Procedure.* Subjects were randomly assigned to the experimental (symbiosis) or the control group. Two "interventionists," graduate students in psychology, conducted the behavioral treatment sessions, each working with an equal number of subjects in each stimulus group. The interventionists identified the stimuli by code letters appearing on the back of the stimulus cards and remained "blind" throughout the data collection as to which group each subject was in.

Each subject met with her interventionist individually, once a week for 8 consecutive weeks. At each session the subject's weight, in indoor clothing without shoes, was measured using a conventional bathroom scale. Treatment sessions were ½ hour long. The 8-week program was designed to be similar to the behavior modification treatment program for obesity used by Wollersheim (1970). Subjects were instructed on how to keep records of the food they ate and its caloric content, how to systematically reduce the number of situations in which they ate, how to eat more slowly and with more awareness of sensation, and how to reward themselves for appropriate eating behavior. (The structure of the program and the specific techniques used are described more fully in Martin, 1975.)

At the beginning and end of each treatment session, the subject was instructed to look into the tachistoscope for a presentation of the subliminal stimulus. The first presentation was introduced in the following manner: The subject was asked to imagine herself in a situation in which she felt tempted to overeat. She was asked to describe this situation fully—the place, time, circumstances, the food she was craving, and so on, until she reported that the image was very vivid. For example, she might describe her feeling when seeing cupcakes in the bakery window as she passed it. The experimenter would then say:

> People usually feel a kind of tension when they want to eat something but are trying to tell themselves to resist it because they want to lose weight. This is a machine [the tachistoscope] which presents flashes of light. Researchers have found that these flashes can be useful in helping people to relax. If you are able to relax yourself at moments when you are craving something to eat which you know you shouldn't, you will be able to make a calmer decision to resist it. So I want you to look into the viewer, holding that image of the cupcakes trying to say "no" to them. I will say, "Ready, get set," and then you will see a flash of light. I will repeat this for a second flash a few seconds later. I want you to use these flashes to help you relax and walk calmly away from the bakery window.

The subject also was instructed that outside of the treatment sessions, whenever she found herself about to overeat, she should form a mental image of the flash of light she had seen in the machine and then try to refrain from eating. She was told that this would get easier when she had more experience with the flashes and that she would have a chance to see them again at the end of the session and at the beginning and end of every subsequent session. Eventually, it was explained, she would find that as she reached for food in an inappropriate way, she would automatically remember the flash of light and be able to remind herself to return to appropriate eating. The rationale for presenting the subliminal stimulus in this manner was that it served to arouse the subject's tension concerning eating behavior, which then could be reduced by the symbiotic fantasies that were being tachistoscopically activated. Thus, it was analogous to the procedure used in the desensitization study earlier described (Silverman et al., 1974).

Four weeks after the program ended (i.e., 12 weeks after the first session), the subjects returned for a follow-up weigh-in and were debriefed. The debriefing consisted of explaining the rationale for the study, showing both stimuli that had been used and informing each subject of the stimulus to which she had been exposed. Without exception, the subjects expressed surprise and in many instances disbelief that any stimulus had been exposed, insisting that they consciously saw nothing more than flickers of light during the experiment.

## Results

Table 1 presents the mean weights of both groups initially, at the end of treatment (8th

Table 1
*Means and Standard Deviations of Weight in Pounds for Study 1*

| Time | Experimental group | | Control group | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Pretreatment | 181.8 | 24.6 | 183.8 | 40.6 |
| Posttreatment (8th week) | 173.8 | 27.0 | 178.5 | 40.7 |
| Follow-up (12th week) | 170.9 | 27.2 | 179.4 | 40.9 |

*Note.* 1 pound = .4536 kg.

week), and at follow-up (12 weeks). Analyses were carried out in which the initial weights were covaried out of the 8th and 12th week weights.[5] At the end of treatment, the results, although in the hypothesized direction, were not significant, $F(1, 27) = 1.84$, $p < .18$. At follow-up, however, the difference between the two groups was significant, $F(1, 27) = 7.08$, $p < .01$. As Table 1 indicates, significance was obtained at the latter time because during the 4-week follow-up period, the two groups behaved differently. The experimental group, on the average, continued to lose weight while the control subjects gained. Since the subjects had not been debriefed prior to the follow-up weigh-in, the difference in their eating behavior during the follow-up period can be ascribed to the continuing effects of the differential subliminal stimulation.

Table 2 presents the analogous findings for percent overweight. These results closely parallel the results for actual weight, with the difference between the two groups approaching significance after 8 weeks, $F(1, 27) = 3.75$, $p < .06$, and reaching significance after 12 weeks, $F(1, 27) = 9.77$, $p < .004$.

Table 2
*Means and Standard Deviations of Percent Overweight for Study 1*

| Time | Experimental group | | Control group | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Pretreatment | 40.4 | 20.1 | 42.7 | 26.6 |
| Posttreatment (8th week) | 34.1 | 31.9 | 39.8 | 26.9 |
| Follow-up (12th week) | 32.0 | 19.9 | 40.5 | 27.7 |

## Study 2

This study was intended as a replication and extension of Study 1, with several small changes and additions instituted.

### *Method*

*Subjects.* Subjects again were recruited through newspaper advertisements. The criteria for selection were the same as in the initial study, except that a more extensive procedure was used for screening out psychotic and borderline-psychotic subjects. Rorschach and figure-drawing protocols were collected in an initial intake assessment, which together with the impression made by the subjects in a brief interview were reviewed by one of the authors (LHS) who has had extensive clinical experience. Six subjects were eliminated on this basis. Of the subjects who began the program, 11 dropped out (5 from the experimental and 6 from the control group) and were replaced. The final sample consisted of 13 subjects in each of the two groups, with mean ages of 31.7 and 36.1 (ages ranged between 22 and 57) and mean percent overweight of 37.9 and 37.4 (percent ranged between 15 and 118) for the experimental and control groups, respectively.[6] Neither of these differences approached significance, nor did differences between the groups in racial composition (92% white) or in the number of years overweight (mean experimental = 20.1 and control = 21.0).

*Stimuli and tachistoscope.* The tachistoscopic conditions were identical to those of the initial experiment. However, the control stimulus was slightly altered so that it now consisted of the words PEOPLE

[5] It is to be noted in Table 1 that with regard to the initial weights of the two groups, although their means were comparable, the standard deviation for the control group was considerably larger than the standard deviation for the experimental group. However, an analysis of covariance still could be carried out, since a test for homogeneity of regression for the two goups revealed that homogeneity was in evidence. Furthermore, with regard to the comparability of the experimental and control groups, for percent overweight (to be discussed) the standard deviations for the two groups were *not* discrepant.

[6] In this study (in contrast to Study 1), percent overweight was calculated taking into account the subject's frame (designated as "small," "medium," or "large"). Also, in assigning subjects to the experimental and control groups in Study 2, an effort was made to keep the groups equivalent for actual weight and percent overweight. In Study 1, however, subjects were randomly distributed.

ARE WALKING (instead of PEOPLE WALKING) and was printed on two lines instead of one. This change was made so that the control stimulus would be more structurally similar to the experimental stimulus MOMMY AND I ARE ONE, which was printed on two lines.

*Procedure.* Four graduate psychology students not associated with the first study served as interventionists. Three were female and one was male, and each saw an equal percent of subjects in the experimental and control groups. As in the first study, the interventionists were blind to the tachistoscopic condition for each subject.

The procedure was identical to that used in Study 1, with the exception that it was extended from 8 weeks to 12 weeks. Also, a second follow-up weigh-in was conducted 8 weeks after the first. Thus, weights were recorded initially, at 12 weeks (when the behavior program and subliminal stimulation ended), after 16 weeks (follow-up 1), and after 24 weeks (follow-up 2). Additionally, to determine whether weight loss would be accompanied by symptom substitution, the subjects also were given a symptom rating scale to fill out at the same four points in time. This was a variant of the Symptom Check List (90 items) (Derogatis, Lipman, Rickels, Uhlenhutts, & Covi, 1974) in which they were asked to indicate on a 5-point scale the degree to which each of 49 psychiatric symptoms were present.[7]

Finally, at the time of the second follow-up, information was elicited from the subjects about the extent to which they had made use of the two aspects of the therapy program during the prior 24 weeks, *outside of the treatment sessions.* That is, they were asked to rate on a 10-point scale, ranging from "not at all" (1) to "extremely frequently" (10), their average weekly use of (a) the behavior modification techniques and (b) the practice of forming mental images of the flashes of light when they were trying to refrain from eating.

## Results

Tables 3 and 4 present the data on the actual weight and percent overweight for Study 2. Analyses of covariance revealed that these results closely parallel those from Study 1. At the end of treatment, the differences between the experimental and control groups were not significant on either measure, $F(1, 23) = 2.42$, $p = .130$, and $F(1, 23) = 1.86$, $p = .183$, for actual weight and percent overweight, respectively. However, at the first follow-up 4 weeks later (or 16 weeks after treatment began), both measures attained significance, $F(1, 23) = 5.03$, $p = .033$, and $F(1, 23) = 4.65$, $p = .039$, respectively. At the second follow-up 8 weeks after the first (or 24 weeks after the program began), the difference between the two groups was again significant on both measures, with the means even further apart than they were at the time of the first follow-up, $F(1, 23) = 7.46$, $p = .011$, and $F(1, 23) = 7.40$, $p = .012$, for actual weights and percent overweight, respectively. As in Study 1, the significant differences at the time of follow-up were due to the experimental group subjects', on the average, continuing to lose weight after the behavior treatment sessions ended, whereas the control group gained back some of the weight that had been lost.

Table 3
*Means and Standard Deviations of Weight in Pounds for Study 2*

| Time | Experimental group | | Control group | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Pretreatment | 168.6 | 25.7 | 171.8 | 33.5 |
| Posttreatment (12th week) | 156.8 | 25.9 | 164.7 | 32.5 |
| Follow-up 1 (16th week) | 154.6 | 26.7 | 165.1 | 26.1 |
| Follow-up 2 (24th week) | 153.5 | 27.5 | 165.9 | 28.2 |

*Note.* 1 pound = .4536 kg.

On the symptom rating scale, both groups showed a significant reduction in pathology reported from the initial assessment to the 16-week assessment ($t = 2.84$, $p = .015$, and $t = 3.03$, $p = .011$ for the experimental and

[7] However, sufficient data were available for comparing the experimental and control subjects only initially and at Follow-up 1. At these times the subjects filled out the rating scale in our laboratory, whereas for the postassessment and for Follow-up 2, many subjects took the scales home with them but never returned them. It also should be noted that at Follow-up 2, five subjects (two experimental and three control) could not return to our laboratory for a weigh-in either because they were out of town or because their job situations would not allow it. We contacted them by telephone and asked them to weigh themselves elsewhere and then phoned them a day later for their weights. Although we cannot be certain that the weights they reported would coincide with what their weights would have registered on our own scale, they followed the same pattern as the subjects in their stimulus groups who came in for the weigh-in.

Table 4
*Means and Standard Deviations of Percent Overweight for Study 2*

| Time | Experimental group | | Control group | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Pretreatment | 37.9 | 26.7 | 36.3 | 26.6 |
| Posttreatment (12th week) | 28.5 | 26.5 | 30.3 | 26.8 |
| Follow-up 1 (16th week) | 26.5 | 27.9 | 30.5 | 26.3 |
| Follow-up 2 (24th week) | 25.9 | 28.3 | 31.6 | 25.0 |

control groups, respectively). The difference in symptom reduction between the two groups was nonsignificant. (With the premeasure covaried out, $F = .024$, $p = .99$.)

Finally, for their ratings (on a 10-point scale) of the degree to which they used the two aspects of the therapy program outside of the treatment sessions, the differences between the two groups were also negligible. With regard to the behavior modification techniques, the average ratings for the experimental and control groups were, respectively, 7.9 and 7.1, and for the use of the mental images of the flashes, 2.8 and 3.2 ($t < 1$ in both instances).

## Discussion

It seems warranted to conclude that the 4-msec exposure of MOMMY AND I ARE ONE over several weeks aided both groups of experimental subjects in losing weight. It is true that this conclusion is based on the follow-up weights, but this does not detract from its significance, since there is nothing to indicate that anything other than the subliminal stimuli exposed during the treatment program acted differentially on the groups of experimental and control subjects. In both studies the experimental subjects were given the same behavioral therapy program as the controls, and they had the same number of tachistoscopic exposures by interventionists who were blind to the stimulus messages. In the second study, there were self-report data that indicated that there was no difference in the frequency with which the two groups, outside of the treatment sessions, used the techniques that they had been taught. Further, since the subjects themselves did not know what stimuli they were receiving, demand characteristics cannot be implicated to account for the significant differences at follow-up. Only the actual content of the stimuli that were subliminally exposed was different for the experimental and control subjects.

The findings from the two studies reported here should be considered in combination with analogous results from investigations with (insect) phobics (Silverman et al., 1974), schizophrenics (Silverman et al., 1975), and undergraduate college students (Parker, 1977) cited earlier. In toto, the results indicate that the subliminal stimulation of the fantasy MOMMY AND I ARE ONE not only can lead to improved adaptation within a laboratory session, as earlier studies of subliminal psychodynamic activation have demonstrated (summarized in Silverman, 1976), but when combined with an intervention that is effective in its own right and when given over a prolonged period of time, this effectiveness is enhanced outside the laboratory. Thus, this intervention can be viewed as having practical utility.

As far as the intervention's utility as an aid in weight control is concerned, it should be noted in the tables that the significant differences that were found were a function of the fact that while the control groups, on the average, regained weight during the follow-up periods, both experimental groups showed further weight loss; and in Study 2, even more weight was lost during the second follow-up period than during the first. This is noteworthy, since as Hall, Hall, Hanson, and Borden (1974) pointed out, it is unusual for obese patients to continue to lose weight during follow-up periods. An examination of the individual data reveals that although only 32% of the control subjects (in both studies combined) accomplished this, 84% of the experimental subjects continued to lose weight. Thus, this experimental intervention may be able to reverse a trend that typically limits the effectiveness of behavior modification treatment of obesity. On the other hand, it also should be noted that the largest (average) weight loss reported for an experimental

group in this pair of studies (15.1 pounds (6.8 kg) or a 12% reduction in weight in Study 2 over a 24-week period) must be viewed as modest and not beyond the range of what has been reported by other (relatively) successful intervention programs for weight control. Thus, if subliminal symbiotic stimulation is to be of substantive value in the treatment of obesity, ways should be sought to increase its potency.

A comparison of the data from Study 1 with that from Study 2 underscores the fact that what led to the differential behavior of the experimental and control subjects during the follow-up periods was not the additional time that elapsed but their response to the nonavailability of treatment. By extending the program an additional 4 weeks in Study 2, the time between the preweights and postweights (12 weeks) was identical to the time between the preweights and follow-up weights in Study 1. Yet even though this extra 4 weeks led to increased weight loss for *both* groups (note in the tables the approximately 30% greater posttreatment weight loss in Study 2 than in Study 1), it did not differentially affect the experimental and control subjects. Thus in Study 2, as in Study 1, the difference between the experimental and control groups did not reach significance until the subjects were on their own for 4 weeks. Apparently, the crucial benefits of the symbiotic stimulation was in allowing the subjects to retain their ability to diminish food intake *in the absence of weekly treatment contact.* Or in psychoanalytic terminology, the presumed activation of the MOMMY AND I ARE ONE fantasy may have allowed the subjects to better internalize the techniques that they had been taught. Whether this was because the therapist was unconsciously equated with "mommy" (whom they now felt more at one with) or for some other reason remains a matter for further study.

A number of other questions also remains to be addressed. First, it would be important to determine from continued follow-ups the duration of the "boost" that the subliminal symbiotic stimulation gives to behavior modification methods in controlling overeating.

Second, there is the question of whether the diminished overeating brought about by the symbiotic stimulation is at the expense of personality change that could be viewed as maladaptive. In Study 2, the fact that there was no difference in symptom reduction between the experimental and control groups and that, in fact, both groups reported significantly *fewer* symptoms at 16 weeks than they did initially strongly argues against the operation of symptom substitution. However, as one of us has argued elsewhere (Silverman, 1974) in evaluating whether symptom reduction is "gained at a price" as a result of *any* kind of intervention, more than symptom substitution must be evaluated. From what can be observed clinically, the disappearance of symptoms is sometimes accompanied by the emergence of maladaptive behavior that is not experienced as a "symptom." In evaluating any kind of therapeutic intervention, one should investigate whether, and if so to what degree, asymptomatic as well as symptomatic negative personality changes occur when symptoms remit, a practice that we plan to follow in investigations using subliminal symbiotic stimulation.

Third, there is the question of what the precise aspects are of the MOMMY AND I ARE ONE stimulus that account for its effectiveness in weight control. In work with other subject groups, data from several studies have indicated that in order for this stimulus to be ameliorative (when subliminally presented), it must contain a reference to "oneness," but the inclusion of mommy as the person with whom the oneness is achieved is not essential.[8]

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[8] With regard to the results on "oneness," there were two relevant studies. Kaplan (1976) found that while MOMMY AND I ARE ONE reduced pathology in schizophrenics, other reassuring messages involving mommy (e.g., MOMMY FEEDS ME WELL and MOMMY IS ALWAYS WITH ME) did not have this effect. Bronstein (1976) investigated the effectiveness of other "internalization" of mother messages (e.g., MOMMY IS INSIDE ME and MOMMY AND I ARE ALIKE) as well as MOMMY AND I ARE ONE and found that only the latter reduced pathology for schizophrenics. Even though the reference to oneness thus seems to be essential for an adaptation-enhancing effect, data from two other studies indicate that the fantasy of oneness does not have to involve mommy. Kaye (1975) found that the stimulus MY GIRL AND I ARE

Whether the same applies to obese individuals is something we are currently investigating.

There is also an ethical question that can be raised about subjecting people to subliminal stimulation designed to affect their behavior. This issue was dealt with in the current studies by debriefing the subjects at the experiment's conclusion as to the content of their subliminal message and providing them with the opportunity to talk about their reactions. More recently, we have been informing subjects from the beginning that they will be receiving subliminal messages and have found that this does not prevent the MOMMY AND I ARE ONE message from producing its ameliorative effect (Parker, 1977). A further step toward complete openness with subjects that currently is being explored is telling the subjects beforehand which subliminal messages are being used, without telling them which particular message he or she is receiving.

Finally, a question can be raised about what mediates the effectiveness of the MOMMY AND I ARE ONE message as an aid in weight control. Does it act synergistically with the behavior modification techniques, making it easier for subjects to learn and use the latter? Or does it act in a more direct manner by strengthening behavior controls, reducing anxiety, or even by diminishing unconscious symbiotic longings? To make this determination, measures will have to be obtained of the variables just cited in each treatment session, a research strategy that we plan to pursue.

## Reference Note

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ONE also produced an amelioration of symptoms in male schizophrenics; and Parker (1977) in the earlier cited study of the effects of subliminal stimulation as a learning aid for college students, found that the stimulus MY PROF AND I ARE ONE, as well as MOMMY AND I ARE ONE, led to significantly higher grades than a neutral control stimulus.

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